Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] I claim as my invention:

1. A method for measuring the face angle of a golf club, a golf club head or a face component, the method comprising:

orienting the golf club, the golf club head or the face component on a base plate of an apparatus;

aligning a face center locating device with a center point of a face of the golf club, golf club head or the face component; and

determining the face angle of the golf club, golf club head or face component by measuring the distance of a plurality of non-contact displacement measuring devices, at least two of the plurality of non-contact displacement measuring devices positioned on opposite sides of the face center locating device.

[c2] 2. The method according to claim 1 wherein the face center locating device and the plurality of non-contact displacement measuring devices are lasers.

[c3] 3. A method for measuring the face angle of a golf club, the method comprising:

placing a golf club head of the golf club on a base plate

of an apparatus;

placing a shaft of the golf club in a shaft support assembly;

aligning the shaft with a lie angle of a golf club on a lie scale plate of the apparatus;

centering the shaft of the golf club within a shaft center sensor assembly of the apparatus;

aligning a face center locating device with a center point of a face of the golf club; and

determining the face angle of the golf club by measuring the distance of a plurality of non-contact displacement measuring devices, at least two of the plurality of non-contact displacement measuring devices positioned on opposite sides of the face center locating device.

[c4] 4. The method according to claim 3 wherein the face center locating device and the plurality of non-contact displacement measuring devices are lasers.

[c5] 5. The method according to claim 3 wherein the golf club head of the golf club is placed on a tacky surface of the base plate.

[c6] 6. The method according to claim 3 wherein centering the shaft within the shaft center sensor assembly comprises moving the base plate forward, rearward and laterally.

[c7] 7. The method according to claim 3 wherein aligning the face center locating device comprises moving a non-contact displacement measuring assembly vertically and horizontally relative to the base plate.

[c8] 8. A method for measuring the face angle of a golf club head, the method comprising:
attaching a mandrel to golf club head, the mandrel simulating a shaft for the golf club head;
placing the golf club head on a smooth surface of a base plate of an apparatus;
placing the mandrel attached to the golf club in a shaft support assembly;
aligning the mandrel with a lie angle for the golf club head on a lie scale plate of the apparatus;
centering the mandrel attached to the golf club head within a shaft center sensor assembly of the apparatus;
aligning a face center locating device with a center point of a face of the golf club head; and
determining the face angle of the golf club head by measuring the distance of a plurality of non-contact displacement measuring devices, at least two of the plurality of non-contact displacement measuring devices positioned on opposite sides of the face center locating device.

[c9] 9. A method for measuring the face angle of a face component of a golf club head, the method comprising:
attaching a mandrel to face component, the mandrel simulating a shaft for the golf club head;
placing the face component on a smooth surface of a base plate of an apparatus;
placing the mandrel attached to the face component in a shaft support assembly;
aligning the mandrel with a lie angle for the golf club head on a lie scale plate of the apparatus;
centering the mandrel attached to the face component within a shaft center censor assembly of the apparatus;
aligning a face center locating device with a center point of a face of the golf club head; and
determining the face angle of the face component by measuring the distance of a plurality of non-contact displacement measuring devices, at least two of the plurality of non-contact displacement measuring devices positioned on opposite sides of the face center locating device.

[c10] 10. An apparatus for measuring the face angle of a golf club, a golf club head or a face component, the apparatus comprising:
a base;
a base plate assembly positioned on the base, the base

plate assembly capable of X-Y movement relative to the base;

a non-contact displacement measuring assembly comprising a face center locating device, a plurality of non-contact displacement measuring devices, a vertical movement device and a horizontal movement device, the non-contact displacement measuring assembly positioned on the base forward of the base plate assembly;

a lie adjustment assembly positioned on the base rearward of the base plate assembly, the lie adjustment assembly comprising a lie scale plate, an arm and a guide support plate;

a shaft support assembly attached to the guide support plate of the lie adjustment assembly, the shaft support assembly comprising a shaft support arm and a shaft support device with an aperture;

a shaft center sensor assembly attached to the arm of the lie adjustment assembly above the base plate assembly; and,

an operator interface terminal positioned on the base.

[c11] 11. An apparatus for measuring the face angle of a golf club, a golf club head or a face component, the apparatus comprising:

a base;

a base plate assembly positioned on the base, the base

plate assembly capable of X-Y movement relative to the base;

non-contact displacement means for measuring the face angle of the golf club, the golf club head or the face component, the non-contact displacement measuring means positioned on the base forward of the base plate assembly;

means for simulating the lie angle of the golf club, golf club head of face component, the simulating means positioned on the base rearward of the base plate assembly;

means for centering a shaft of the golf club or a mandrel of the golf club head or face component, the centering means positioned above the base plate assembly; and

means for operator interface, the operator interface means positioned on the base.